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04/25/00  
U.S. PTO

jc625 U.S. PTO  
09/556801  
04/25/00

Date: April 25, 2000  
Docket No.: 0461-0300P

Assistant Commissioner for Patents  
Box PATENT APPLICATION  
Washington, D.C. 20231

Sir:

Transmitted herewith for filing is the patent application of  
Inventor(s): TORISELLI, Franco

For: TYRE REMOVAL MACHINE WITH MANUALLY OR AUTOMATICALLY  
POSITIONABLE TURRET

Enclosed are:

- ☒ A specification consisting of 8 pages
- ☒ 6 sheet(s) of formal drawings
- ☒ An assignment of the invention
- ☒ Certified copy of Priority Document(s)
- ☒ Executed Declaration ☒ Original ☐ Photocopy
- ☒ A verified statement to establish small entity status under 37 CFR 1.9 and 37 CFR 1.27
- ☐ Preliminary Amendment
- ☐ Information Disclosure Statement, PTO-1449 and reference(s)

09556801-0461-0300

Other \_\_\_\_\_

The filing fee has been calculated as shown below:

LARGE ENTITY				SMALL ENTITY	
FOR	NO. FILED	NO. EXTRA	RATE FEE		RATE FEE
BASIC FEE	***** ***** *****	***** ***** *****	***** ***** \$690.00 *****	or	**** **** \$345.00 ****
TOTAL CLAIMS	6 - 20 =	0	x18 =\$ 0.00	or	x 9 = \$ 0.00
INDEPENDENT	1 - 3 =	0	x78 =\$ 0.00	or	x 39 = \$ 0.00
MULTIPLE DEPENDENT CLAIM PRESENTED	_____		+260 = \$ 0.00	or	+130 = \$ 0.00
TOTAL \$ 0.00				TOTAL \$ 345.00	

X A check in the amount of \$ 385.00 to cover the filing fee and recording fee (if applicable) is enclosed.

\_\_\_\_\_ Please charge Deposit Account No. 02-2448 in the amount of \$ \_\_\_\_\_. A triplicate copy of this transmittal form is enclosed.

\_\_\_\_\_ No fee is enclosed.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. 1.16 or under 37 C.F.R. 1.17; particularly, extension of time fees.

Respectfully submitted,

BIRCH, STEWART, KOLASCH & BIRCH, LLP

By \_\_\_\_\_

JOSEPH A. KOLASCH

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00540 "T099550

Applicant or Patentee: Franco TORISELLI Attorney's Docket No.: 0461-0300P  
Serial or Patent No.: new  
Filed or Issued: April 25, 2000  
For: "TYRE REMOVAL MACHINE WITH MANUALLY OR AUTOMATICALLY POSITIONABLE TURRET"

VERIFIED STATEMENT (DECLARATION) CLAIMING SMALL ENTITY  
STATUS (37 CFR 1.9[f] AND 1.27[b]) - SMALL BUSINESS CONCERN

I hereby declare that I am

- ☐ the owner of the small business concern identified below:  
☒ an official of the small business concern empowered to act on behalf of the concern identified below:

NAME OF CONCERN: SOCIETA' ITALIANA COSTRUZIONI ELETTROMECCANICHE-S.I.C.E.-S.P.A.

ADDRESS OF CONCERN: I-42015 CORREGGIO (Reggio Emilia) - ITALY - Via Modena, 34

I hereby declare that the above-identified small business concern qualifies as a small business concern as defined in 13 CFR 121.3-18, and reproduced in 37 CFR 1.9(d), for purposes of paying reduced fees under Section 41(a) and (b) of Title 35, United States Code, in that the number of employees of the concern, including those of its affiliates, does not exceed 500 persons. For purposes of this statement, (1) the number of employees of the business concern is the average over the previous fiscal year of the concern of the persons employed on a full-time, part-time or temporary basis during each of the pay periods of the fiscal year, and (2) concerns are affiliates of each other when, either directly or indirectly, one concern controls or has the power to control the other, or a third party or parties controls or has the power to control both.

I hereby declare that rights under contract or law have been conveyed to and remain with the small business concern identified above with regard to the invention, entitled "TYRE REMOVAL MACHINE WITH MANUALLY OR AUTOMATICALLY POSITIONABLE by applicant(s) Franco TORISELLI, TURRET" described in

- ☒ the specification filed herewith  
☐ application \_\_\_\_\_ filed \_\_\_\_\_  
☐ Patent No. \_\_\_\_\_, issued \_\_\_\_\_

If the rights held by the above-identified small business concern are not exclusive, each individual, concern or organization having rights to the invention is listed below\* and no rights to the invention are held by any person, other than the inventor, who could not qualify as a small business concern under 37 CFR 1.9(d) or by any concern which would not qualify as a small business concern under 37 CFR 1.9(d) or a nonprofit organization under 37 CFR 1.9(e). \*NOTE: Separate verified statements are required from each named person, concern or organization having rights to the invention averring to their status as small entities. (37 CFR 1.27)

FULL NAME \_\_\_\_\_  
ADDRESS \_\_\_\_\_

☐ Individual ☐ Small Business Concern ☐ Nonprofit Organization

I acknowledge the duty to file, in this application or patent, notification of any change in status resulting in loss of entitlement to small entity status prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate. (37 CFR 1.28[b]).

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application, any patent issuing thereon, or any patent to which this verified statement is directed.

NAME OF PERSON SIGNING: Franco TORISELLI  
TITLE OF PERSON OTHER THAN OWNER: Chairman  
ADDRESS OF PERSON SIGNING: I-42015 CORREGGIO (Reggio Emilia) - Italy -  
Via Astrologo, 14  
SIGNATURE: [Signature] DATE: February 17, 2000

IN THE U.S. PATENT AND TRADEMARK OFFICE

Applicant(s): TORISELLI, Franco

Application No.:

Group:

Filed: April 25, 2000

Examiner:

For: TYRE REMOVAL MACHINE WITH MANUALLY OR AUTOMATICALLY  
POSITIONABLE TURRET

L E T T E R

Assistant Commissioner for Patents  
Box Patent Application  
Washington, D.C. 20231

April 25, 2000  
0461-0300P

Sir:

Under the provisions of 35 USC 119 and 37 CFR 1.55(a), the applicant hereby claims the right of priority based on the following application(s):

<u>Country</u>	<u>Application No.</u>	<u>Filed</u>
ITALY	RE99U000016	04/30/99

A certified copy of the above-noted application(s) is(are) attached hereto.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. 1.16 or under 37 C.F.R. 1.17; particularly, extension of time fees.

Respectfully submitted,

BIRCH, STEWART, KOLASCH & BIRCH, LLP

By: 

JOSEPH A. KOLASCH

Reg. No. 22,463

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TYRE REMOVAL MACHINE WITH MANUALLY OR AUTOMATICALLY POSITIONABLE  
TURRET

5 This invention relates to tyre removal machines and in particular  
to the means for operating the turret which supports the mounting/  
removal tool.

10 Tyre removal machines are known in which the turret supporting the  
mounting/removal tool is operated manually by the operator against  
a spring, the purpose of which is to maintain the turret in a  
raised position.

15 However, the operator is required to exert a certain force to  
manually operate the turret, because of which tyre removal  
machines have been constructed in which the turret is operated by  
a pneumatic cylinder-piston unit.

20 This latter type of machine is provided with systems which enable  
the turret to be positioned automatically in the correct working  
position. For this purpose the operator causes the turret to  
descend by means of a suitable pushbutton, and when the mounting/  
removal tool supported by the turret touches the edge of the wheel  
rim, a strangling device locks the turret in its correct working  
position by raising it a few millimetres from the wheel rim edge.

25 Machines of this type operate perfectly when used on steel wheel  
rims, however problems arise when they are used on light alloy  
rims. In this respect, when the mounting/removal tool touches the  
edge of the wheel rim it can scratch or damage it.

Besides being unattractive, this can prejudice its seal against the tyre bead, in particular for tubeless tyres.

The object of this invention is to overcome the stated drawback  
5 within the framework of a rational, reliable and relatively low-  
cost solution.

The invention attains said object by providing a tyre removal machine in which the turret can be positioned either manually or automatically depending on the type of wheel rim to be subjected to tyre mounting or removal.

The particular characteristics of the invention are defined in the claims.

The constructional and functional characteristics of the invention will be more apparent from the description of a preferred embodiment thereof given hereinafter by way of non-limiting example and illustrated on the accompanying drawings.

Figure 1 is a side view of the tyre removal machine of the invention.

Figure 2 is an enlarged section through a part of Figure 1.

Figure 3 is a section on a vertical plane through the control handle for operating the tool holder turret, showing the control pushbuttons in their inactive position.

30 Figure 4 is a view similar to Figure 3 but showing the position  
which the turret control pushbuttons assume during turret descent.

Figure 5 is a view similar to Figure 3 but showing the position which the turret control pushbuttons assume when the turret is  
35 locked in its working position.

Figure 6 is a section on the line VI-VI of Figure 3.

Figure 7 is a section on the line VII-VII of Figure 3.

Figure 8 is a section on the line VIII-VIII of Figure 3.

5 Figure 9 is a section on the line IX-IX of Figure 3.

Figure 1 shows the tyre removal machine 1, comprising in brief a casing supporting the usual plate 3 provided with self-centering jaws 4 for gripping the wheel rim. From the rear of the casing 2  
10 there extends a vertical column 5, to the top of which there is fixed a component 66 for guiding a slidable horizontal shaft 6, which supports the usual vertical turret 7 carrying the mounting/removal tool 70.

15 In detail, the rear end of the shaft 6 is inserted into a strangling plate 80 operated by a cylinder-piston unit 8, for locking the shaft 6 in position. To the front end of the shaft 6 there is welded a sleeve 9 of vertical axis, having a through hole of hexagonal cross-section to receive the turret 7, which has a  
20 cross-section matching that of the hole in the sleeve 9.

To the front of the sleeve 9 there is fixed a C-shaped plate 10, which between the front of said sleeve and the base of the plate 10 defines a channel for receiving a single-acting cylinder-piston  
25 unit 11 for operating the turret 7 during its automatic operation.

Specifically, as shown in Figure 2, the turret 7 is connected to the cylinder-piston unit 11 by a piece 12 provided with a cavity 120 for receiving the upper end of the turret 7 and a cavity 121  
30 for receiving the rear of the cylinder-piston unit 11. The rod 111 of said cylinder-piston unit 11 is fixed to the plate 10 by a block 13.

The cavity 120 also has a seat for receiving the end of the spring  
35 14, which is coaxial to the turret 7, and maintains the turret 7 in its raised position, as shown in Figure 1 and Figure 2.

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The other end of the spring 14 rests on a strangling plate 15.

The plate 15 is arranged to lock the turret in its working position and is operated by a cylinder-piston unit 16 fixed to the shaft 6 in proximity to the sleeve 9.

The operator automatically positions the turret by operating two pushbuttons 17 and 18 provided in a handle 19 fixed to the plate 10.

10

The pushbutton 17 controls the operation of the cylinder-piston unit 11 and hence the automatic lowering of the cylinder-piston unit 7, whereas the pushbutton 18 controls both the operation of the cylinder-piston unit 17 to which the strangling plate 15 for locking the turret 7 in its working position is connected, and the operation of the cylinder-piston unit 8 to which the strangling plate 80 for locking the shaft 6 is connected.

With reference to Figure 3, the pushbuttons 17 and 18 are connected respectively to two slide valves 20 and 21, the three-way seats 22 and 23 of which are integral with the the handle 19.

The seat 22 has a port 220 communicating with the compressed air fed line 24, a port 221 communicating with the compressed air delivery line 25 to the cylinder-piston unit 11, and a port 222 connected to a discharge line 26, as shown in Figures 6, 7 and 8.

From the seat 22 there also extends a channel 27 which opens into the port 230 feeding compressed air to the seat 23. This latter, as shown in Figures 6, 7 8, also has a port 231 communicating with the channel 28 connected to the compressed air delivery line 29 to the cylinder-piston units 8 and 16, and a port 232 for discharge to the outside.

The two slide valves 20 and 21 can be switched by the operator independently of each other between an inactive position, shown in Figure 3, and an active position. To switch from the inactive



position to the active position, the operator operates the pushbuttons 17 and 18. To carry out the reverse operation the operator operates a trigger 30 which joins together the front ends of the slide valves 20 and 21, which emerge from the body of the handle.

For automatic operation of the turret 7, the operator presses the pushbutton 17 to move the slide valve 20 into its active position, as shown in Figure 4. In this manner, the compressed air feed line 24 is connected to the line 25 which delivers compressed air to the cylinder-piston unit 11.

The compressed air is fed into the chamber 110 of the cylinder-piston unit 11 through its rod 111. The line 25 opens into a hole, not shown, present in the lower part of the rod 111, and then feeds the compressed air into the rod. The air emerges from the rod 111 to enter the chamber 110 via a plurality of holes 112, one of which is visible in Figure 2. On filling the chamber 110 with compressed air, the cylinder 121 of the cylinder-piston unit 11 is pulled downwards, as is consequently the turret 7.

When the tool 70, supported by the turret 7, touches the edge of the wheel rim, the operator presses the pushbutton 18 to switch the slide valve 21 to its active position, as shown in Figure 5. In this manner the compressed air feed port is connected to the channel 28 delivering to the cylinder-piston units 8 and 16, which operate the strangling plates 80 and 15 respectively, to lock both the shaft 6 and the turret 7 in position.

When the tyre has been mounted on or removed from the wheel rim, the operator returns the turret to its raised position of Figure 1 by operating the trigger 30. In this manner the two slide valves are switched to their inactive position shown in Figure 3. In this position the compressed air delivery line 29 to the cylinder-piston units 8 and 16 is connected to the discharge line 232, to enable the compressed air contained in the chambers of said cylinder-piston units to escape, with consequent release of the

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turret 7 and shaft 6.

5 Simultaneously the compressed air delivery line 25 to the cylinder-piston unit 11 is connected to the discharge line 26, to enable the air present in the chamber 110 of the cylinder-piston unit 11 to escape, with consequent return of the turret 7 into its raised position by the spring 14.

10 Manual operation of the turret 7 is extremely simple. The operator merely lowers the turret 7 and locks it in the correct working position by pushing the pushbutton 18 to cause the cylinder-piston units 8 and 16 to operate the strangling plates 80 and 15 respectively. When the tyre has been mounted on or removed from the wheel rim, the operator pulls the trigger 30 to return  
15 the slide valve 21 into its inactive position so that the air contained in the chambers of said cylinder-piston units discharges through the discharge port 232, and the plates 15 and 80 return to the position in which they release the turret 7 and shaft 6 respectively, to enable the spring 14 to return the turret 7 into  
20 its raised position.

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CLAIMS

- 005240 FEB 95 60
1. A tyre removal machine with manually or automatically positionable turret comprising a casing supporting a rotatable plate provided with self-centering jaws; a vertical column rising to the side of the plate; a shaft slidable horizontally relative to the column and lockable in position; a sleeve rigid with said shaft and within which the tool holder turret slides vertically, said turret being associated with a spring which maintains the turret spaced from said plate; and pneumatic means for locking said shaft and said turret in position, characterised by comprising turret operating and locking means controlled independently by two three-way slide valves which can be switched between an active position in which the compressed air feed line communicates with the delivery lines of said turret operating and locking means, and an inactive position in which said delivery lines are connected to a discharge line respectively, said two slide valves being both associated with a single trigger, the operation of which switches them into their inactive position.
  2. A machine as claimed in claim 1, characterised in that said turret operating means are a single-acting cylinder-piston unit.
  3. A machine as claimed in claim 1, characterised in that said locking means are a strangling plate operated by a cylinder-piston unit.
  4. A machine as claimed in claim 1, characterised in that the seats of said slide valves are integral with a handle.
  5. A machine as claimed in claim 1, characterised in that when in its active position that slide valve provided for locking the turret also feeds the means for locking said horizontal shaft.
  6. A machine as claimed in claim 5, characterised in that said means for locking said horizontal shaft are a strangling plate operated by a cylinder-piston unit.

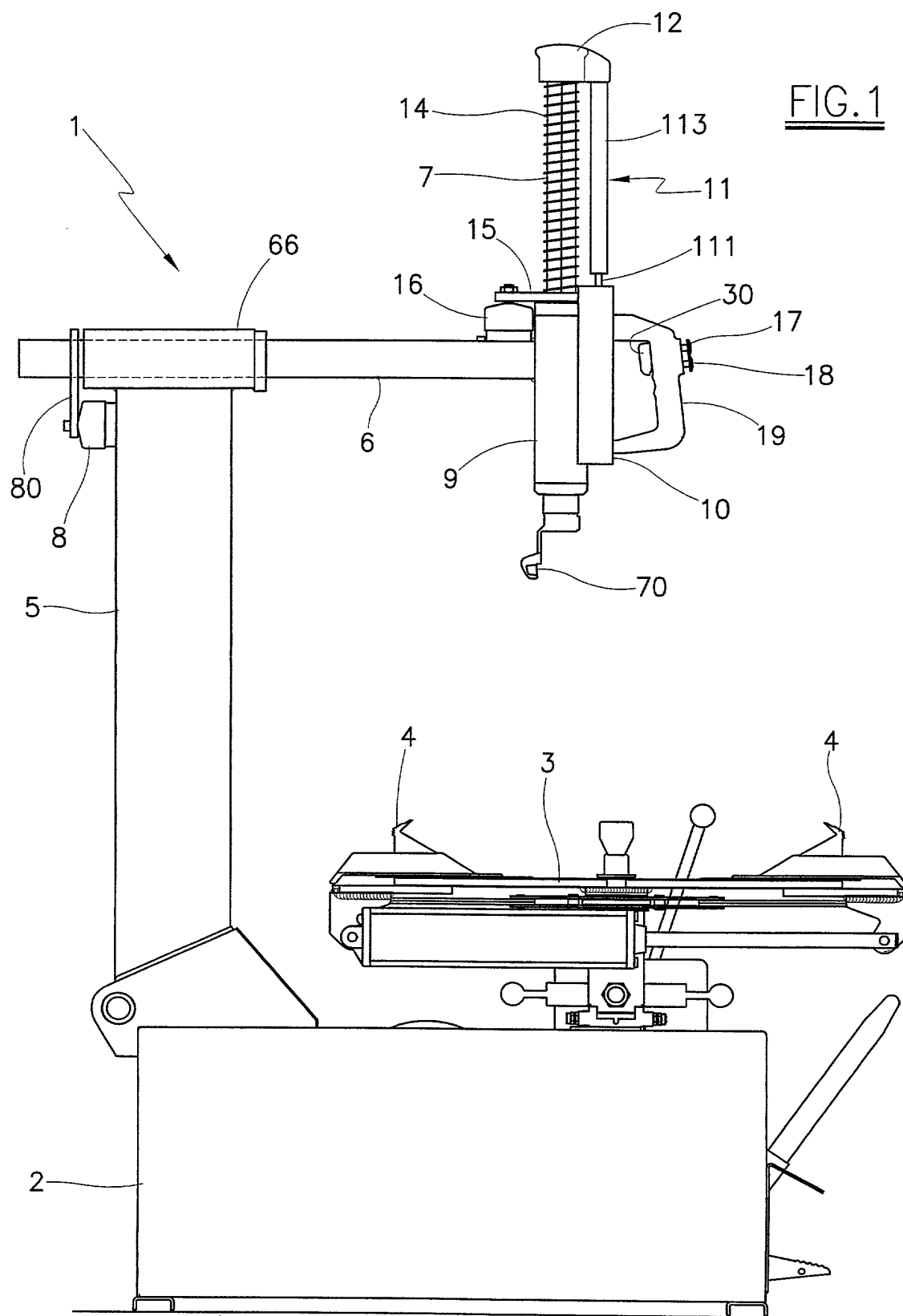
ABSTRACT

TYRE REMOVAL MACHINE WITH MANUALLY OR AUTOMATICALLY POSITIONABLE  
TURRET

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10 Tyre removal machine with manually or automatically positionable  
turret comprising a casing supporting a rotatable plate provided  
with self-centering jaws; a vertical column rising to the side of  
the plate; a shaft slidable horizontally relative to the column  
and lockable in position; a sleeve rigid with said shaft and  
within which the tool holder turret slides vertically, said turret  
being associated with a spring which maintains the turret spaced  
from said plate; pneumatic means for locking said shaft and said  
turret in position; and turret operating and locking means  
15 controlled independently by two three-way slide valves which can  
be switched between an active position in which the compressed air  
feed line communicates with the delivery lines of said turret  
operating and locking means, and an inactive position in which  
said delivery lines are connected to a discharge line  
20 respectively, said two slide valves being both associated with a  
single trigger the operation of which switches them into their  
inactive position.

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FIG.1

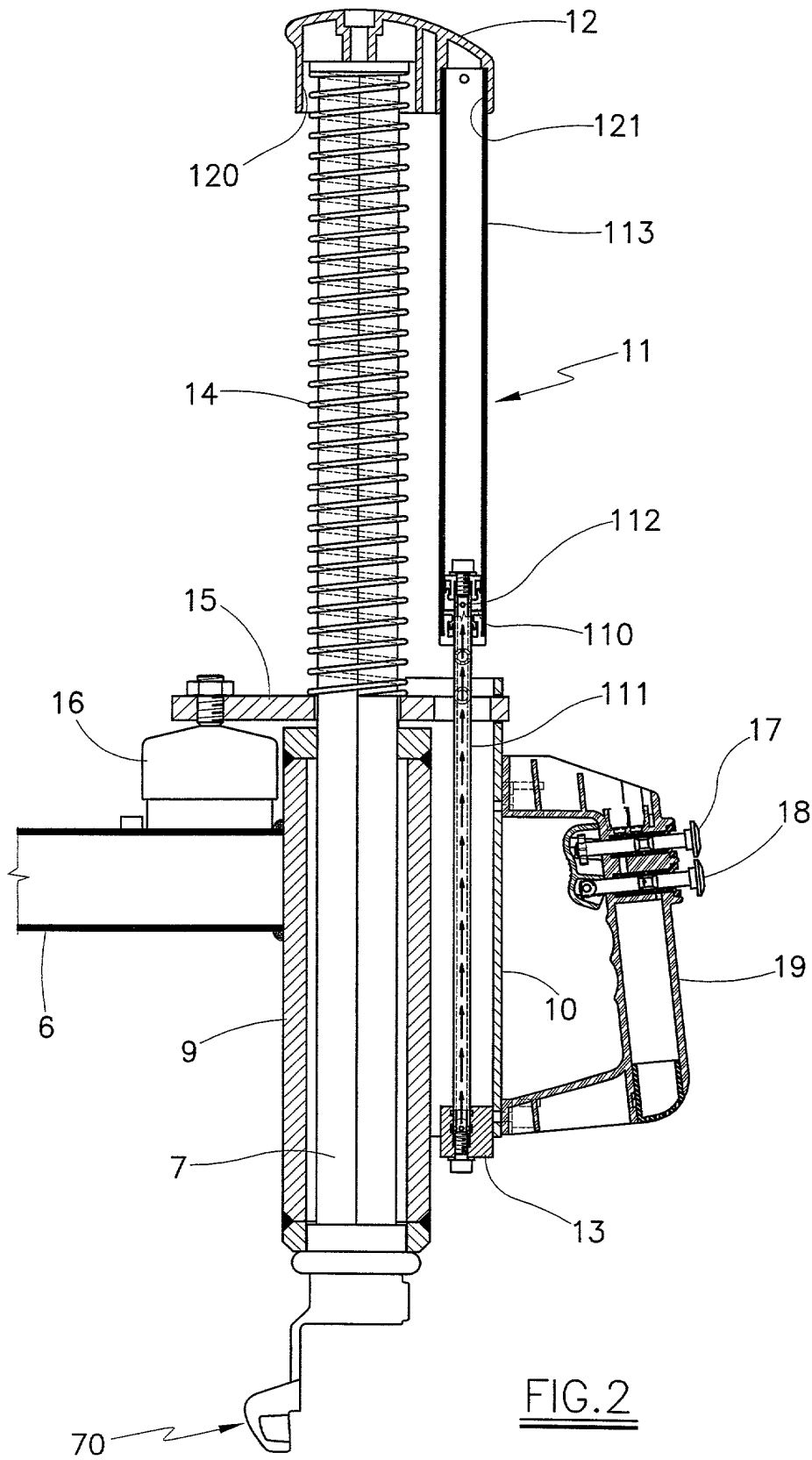
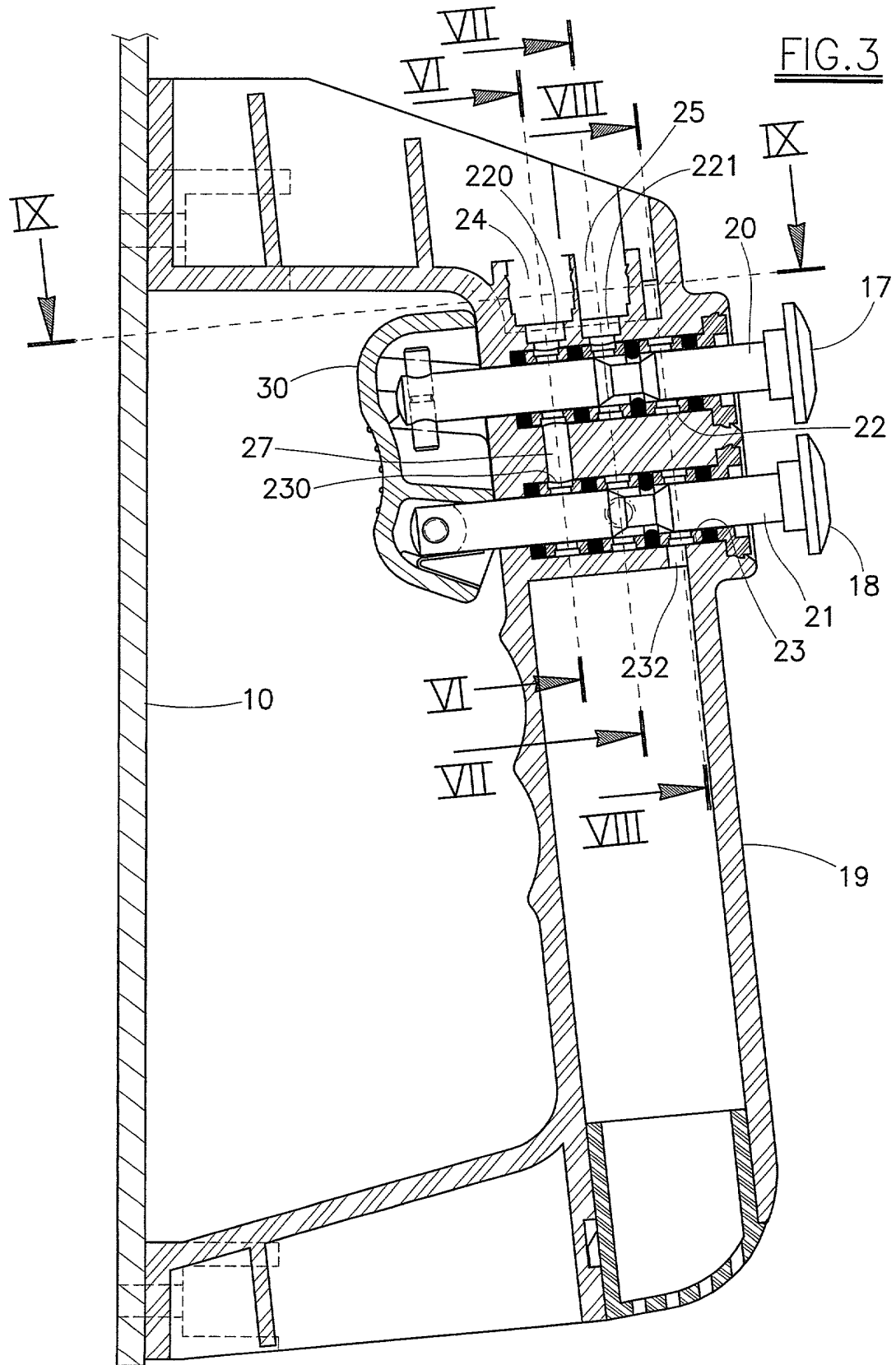


FIG. 2



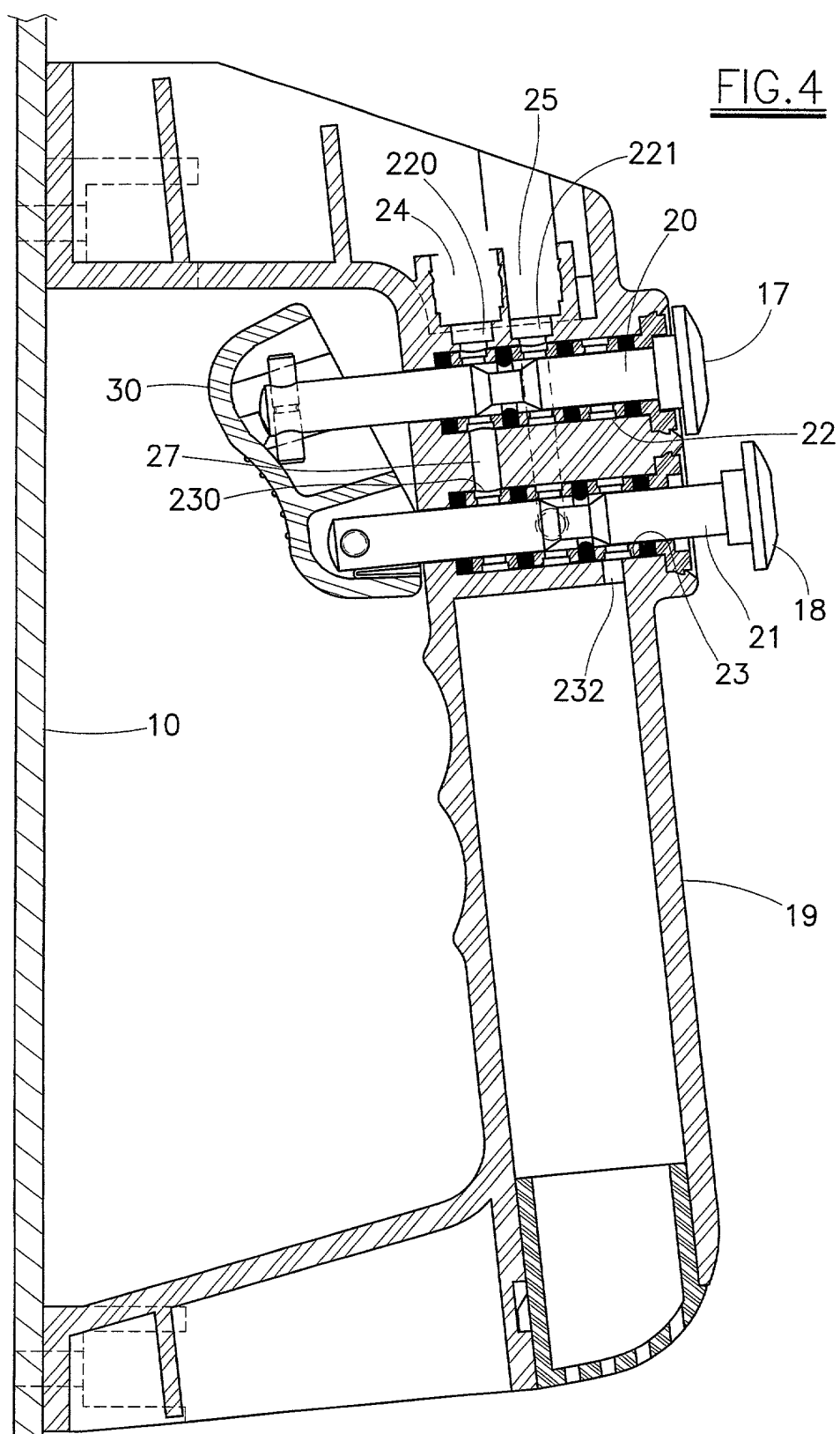
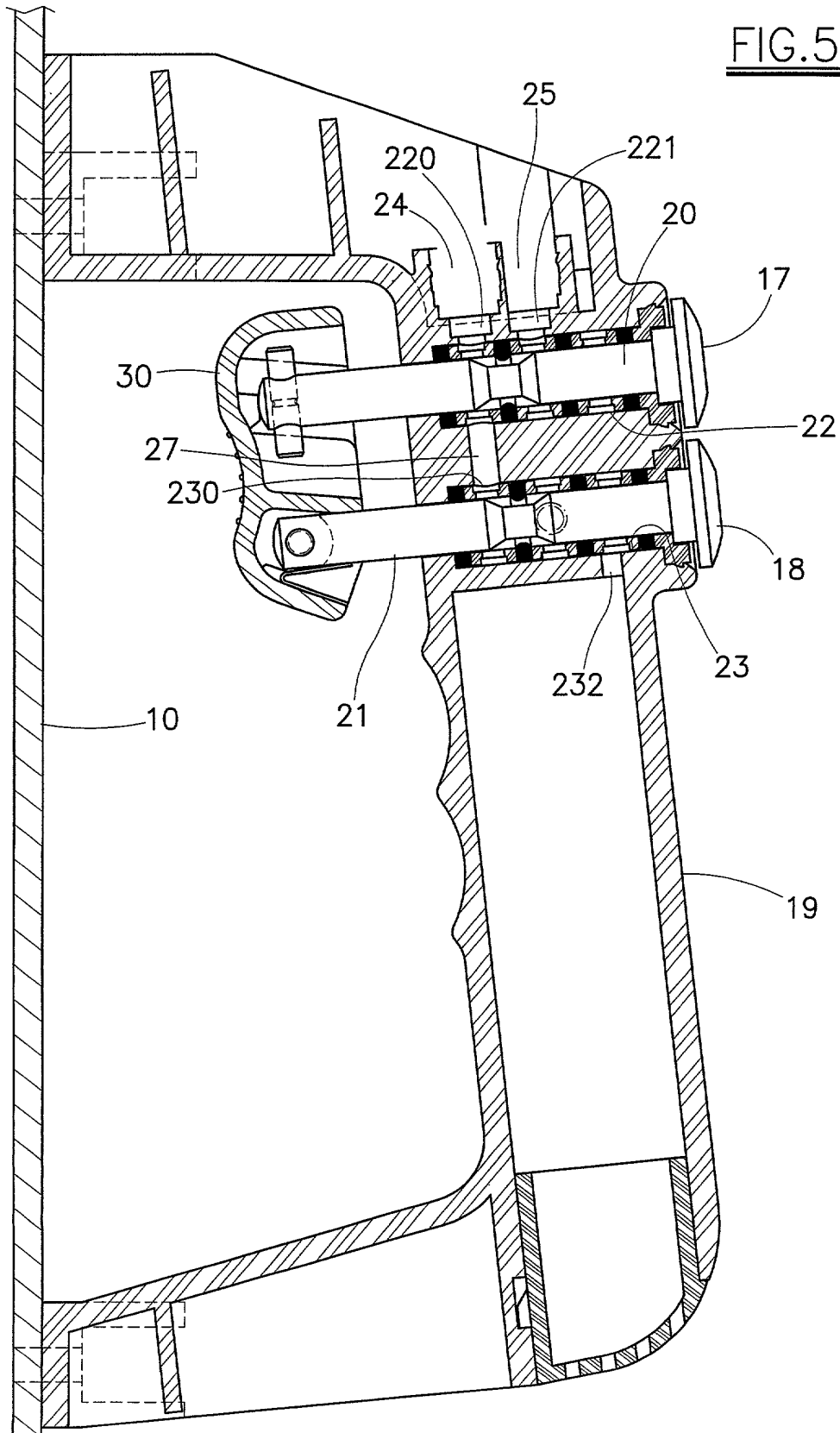
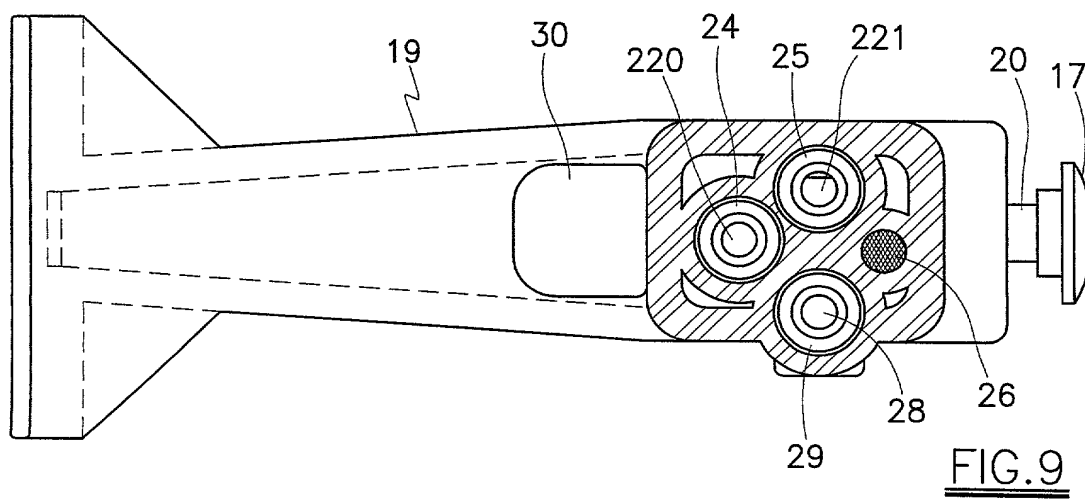
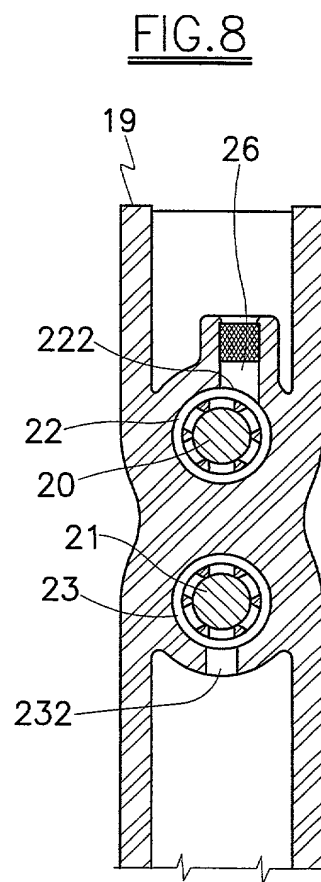
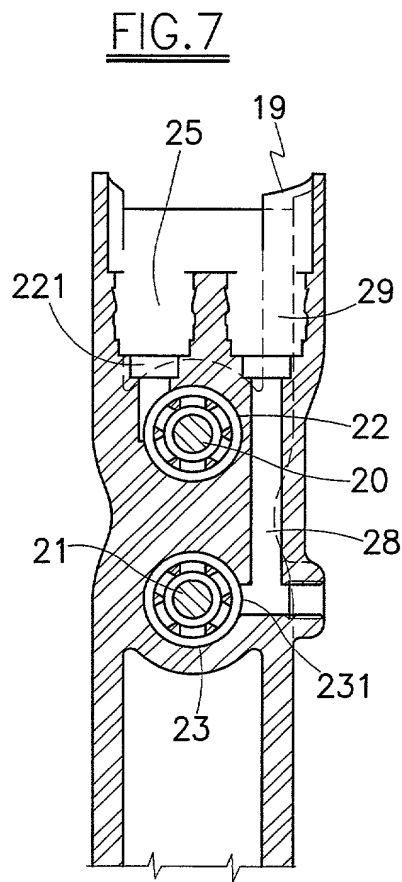
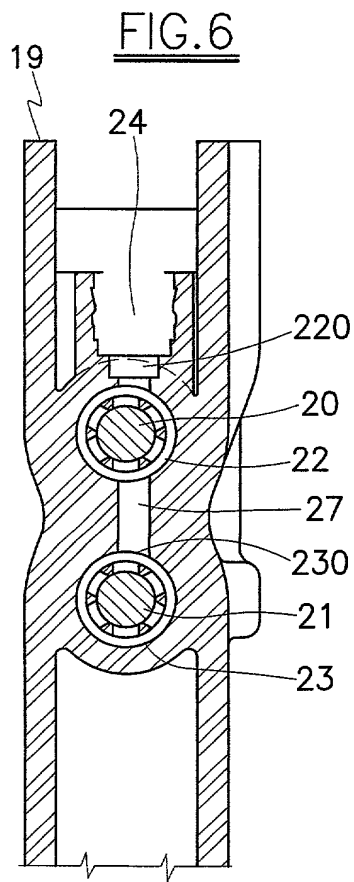




FIG.5



PLEASE NOTE:  
YOU MUST  
COMPLETE THE  
FOLLOWING

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Attorney Docket No.

0461-0300P

## COMBINED DECLARATION AND POWER OF ATTORNEY FOR PATENT AND DESIGN APPLICATIONS

As a below named inventor, I hereby declare that: my residence, post office address and citizenship are as stated next to my name; that I verily believe that I am the original, first and sole inventor (if only one inventor is named below) or an original, first and joint inventor (if plural inventors are named below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

**"TYRE REMOVAL MACHINE WITH MANUALLY OR AUTOMATICALLY POSITIONABLE TURRET"**

Insert Title:

Fill in Appropriate  
Information -  
For Use Without  
Specification  
Attached:

the specification of which is attached hereto. If not attached hereto,

the specification was filed on \_\_\_\_\_ as  
United States Application Number \_\_\_\_\_;  
and amended on \_\_\_\_\_ (if applicable) and/or  
the specification was filed on \_\_\_\_\_ as PCT  
International Application Number \_\_\_\_\_; and was  
amended under PCT Article 19 on \_\_\_\_\_ (if applicable)

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, §1.56.

I do not know and do not believe the same was ever known or used in the United States of America before my or our invention thereof, or patented or described in any printed publication in any country before my or our invention thereof or more than one year prior to this application, that the same was not in public use or on sale in the United States of America more than one year prior to this application, that the invention has not been patented or made the subject of an inventor's certificate issued before the date of this application in any country foreign to the United States of America on an application filed by me or my legal representative or assigns more than twelve months (six months for designs) prior to this application, and that no application for patent or inventor's certificate on this invention has been filed in any country foreign to the United States of America prior to this application by me or my legal representatives or assigns, except as follows.

I hereby claim foreign priority benefits under Title 35, United States Code, §119(a)-(d) of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

### Prior Foreign Application(s)

### Priority Claimed

Insert Priority  
Information:  
(if appropriate)

RE99U000016  
(Number)

Italy  
(Country)

April 30, 1999  
(Month/Day/Year Filed)

☒ ☐  
Yes No

\_\_\_\_\_  
(Number)

\_\_\_\_\_  
(Country)

\_\_\_\_\_  
(Month/Day/Year Filed)

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Yes No

\_\_\_\_\_  
(Number)

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(Country)

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(Month/Day/Year Filed)

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Yes No

\_\_\_\_\_  
(Number)

\_\_\_\_\_  
(Country)

\_\_\_\_\_  
(Month/Day/Year Filed)

☐ ☐  
Yes No

I hereby claim the benefit under Title 35, United States Code, §119(e) of any United States provisional application(s) listed below.

Insert Provisional  
Application(s):  
(if any)

\_\_\_\_\_  
(Application Number)

\_\_\_\_\_  
(Filing Date)

\_\_\_\_\_  
(Application Number)

\_\_\_\_\_  
(Filing Date)

All Foreign Applications, if any, for any Patent or Inventor's Certificate Filed More than 12 Months (6 Months for Designs) Prior to the Filing Date of This Application:

Country

Application Number

Date of Filing (Month/Day/Year)

Insert Requested  
Information:  
(if appropriate)

\_\_\_\_\_

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\_\_\_\_\_

I hereby claim the benefit under Title 35, United States Code, §120 of any United States and/or PCT application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States and/or PCT application in the manner provided by the first paragraph of Title 35, United States Code, §112, I acknowledge the duty to disclose information which is material to the patentability as defined in Title 37, Code of Federal Regulations, §1.56 which became available between the filing date of the prior application and the national or PCT international filing date of this application.

Insert Prior U.S.  
Application(s):  
(if any)

\_\_\_\_\_  
(Application Number)

\_\_\_\_\_  
(Filing Date)

\_\_\_\_\_  
(Status - patented, pending, abandoned)

\_\_\_\_\_  
(Application Number)

\_\_\_\_\_  
(Filing Date)

\_\_\_\_\_  
(Status - patented, pending, abandoned)

## Attorney Docket No.

I hereby appoint the following attorneys to prosecute this application and/or an international application based on this application and to transact all business in the Patent and Trademark Office connected therewith and in connection with the resulting patent based on instructions received from the entity who first sent the application papers to the attorneys identified below, unless the inventor(s) or assignee provides said attorneys with a written notice to the contrary.

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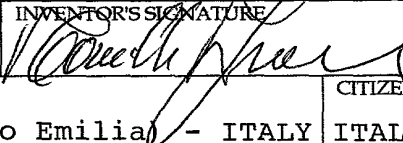
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